



PATENT

THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants: Jin Young KIM, et al.

Appl. No.: 10/718,809

Filing Date: November 24, 2003

Art Unit: 1795

Examiner: Daborah CHACKO-DAVIS

Title: ORGANOMETALLIC COMPOSITION FOR FORMING A METAL
ALLOY PATTERN AND A METHOD OF FORMING SUCH A
PATTERN USING THE COMPOSITION

Atty. Dkt. No.: 6661-000021/US

May 27, 2009

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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 41.37

Madam:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellants submit the
following Appeal Brief.

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I. REAL PARTY IN INTEREST

The real party in interest for the present application is Samsung Electronics Co., Ltd. An assignment of the rights associated with the present application was recorded with the United States Patent and Trademark Office on November 24, 2003 on reel/frame no. 014737/0627.

II. RELATED APPEALS AND INTERFERENCES

There are no known appeals, interferences, or judicial proceedings that will directly affect, be directly affected by, or have a bearing on the Board's decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1-2 and 11 are pending in the present application, with claims 1 and 11 being independent claims. Claims 3-10 have been cancelled. Claims 1-2 and 11 stand rejected. Accordingly, claims 1-2 and 11 are being appealed, with claims 1 and 11 being the only independent claim being appealed.

IV. STATUS OF AMENDMENTS

The after-final amendments filed on February 27, 2009 were not entered by the Examiner on grounds that the amendments raise “new issues” that would require further search and consideration.¹ The Examiner’s refusal to enter the amendments is improper.

The amendments to delete “metallic” from claims 1 and 11 are merely *formalistic* in nature (and not for the substantive purpose of distinguishing over the cited art). Furthermore, the “neutral ligand” limitation of Formula 1 resulting from the amendment has already been searched and considered by the Examiner,² at least with regard to the “neutral ligand” limitations of Formulas 2-3 of claims 1 and 11. Thus, the amendment of “neutral *metallic* ligand” in Formula 1 to “neutral ligand” does *not* rise to the level of a “new issue” that would require further search and consideration.

In any event, the non-entered amendments of February 27, 2009 are *not* necessary to distinguish over the cited art. Rather, the Examiner’s rejections are erroneous and should be reversed, at least for the reasons articulated herein.

¹ *Advisory Action (03/23/2009)*: p. 2.

² *E.g., Final Office Action (10/29/2008)*: p. 3, ln. 1

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 1

Independent claim 1 recites “[a]n organometallic composition comprising organometallic compound (I) of Formula 1 containing Ag.” This reads on the non-limiting example embodiment on p. 7, par. [0014], of the original specification.

Independent claim 1 additionally recites an “organometallic compound (II) of Formula 2 containing at least one of Au, Pd and Ru.” This reads on the non-limiting example embodiment on p. 6, par. [0010], and p. 7, par. [0014], of the original specification.

Independent claim 1 also recites an “organometallic compound (III) of Formula 3 containing at least one of Ti, Ta, Cr, Mo, Ru, Ni, Pd, Cu, Au and Al.” This reads on the non-limiting example embodiment on p. 6, par. [0010], and p. 7, par. [0014], of the original specification.

Independent claim 1 also recites that “the metal components of organometallic compounds (II) and (III), respectively, are present in an amount of 0.01~10 mol% based on the mole amount of Ag in the organometallic compound (I).” This reads on the non-limiting example embodiment on p. 13, par. [0021], of the original specification.

Independent claim 1 also recites that Formula 1 is “Ag_mL_nX_p.” This reads on the non-limiting example embodiment on p. 7, par. [0014], of the original specification.

Independent claim 1 also recites that “L is a neutral metallic³ ligand having photosensitivity, which comprises 1~20 carbon atoms and a donor selected from the

³ The February 27, 2009 after-final amendment to delete “metallic” was not entered on the ground that the amendment would raise “new issues” that would require further

group consisting of N, P, O, S and As.” This reads on the non-limiting example embodiment on p. 8, ln. 1-2, and p. 13, par. [0021], of the original specification.

Independent claim 1 also recites that “X is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻) nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion.” This reads on the non-limiting example embodiment on p. 8, ln. 3-7, of the original specification.

Independent claim 1 also recites that “m is an integer from 1 to 10.” This reads on the non-limiting example embodiment on p. 8, ln. 8, of the original specification.

Independent claim 1 also recites that “n is an integer from 0 to 40, provided that each L is the same or different in the case where n is 2 or higher, and provided that L functions as a ligand connecting Ag atoms in the case where m is 2 or higher.” This reads on the non-limiting example embodiment on p. 8, ln. 9-11, of the original specification.

Independent claim 1 also recites that “p is an integer from 0 to 40, provided that each X is the same or different in the case that p is 2 or higher.” This reads on the non-limiting example embodiment on p. 8, ln. 12-13, of the original specification.

Independent claim 1 also recites that “both n and p are not zero at the same time.” This reads on the non-limiting example embodiment on p. 8, ln. 14, of the original specification.

Independent claim 1 also recites that Formula 2 is “M_mL_nX_p.” This reads on the non-limiting example embodiment on p. 8, ln. 15-16, of the original specification.

search and consideration. The Examiner’s refusal to enter the amendment is improper, as articulated on p. 6 of this Appeal Brief.

Independent claim 1 also recites that "M' is Au, Pd or Ru." This reads on the non-limiting example embodiment on p. 8, ln. 18, of the original specification.

Independent claim 1 also recites that "L' is a neutral ligand comprising 1~20 carbon atoms, which is selected from the group consisting of amine compounds, phosphine compounds, phosphite compounds, phosphineoxide compounds, arsine compounds, thiol compounds, carbonyl compounds, alkenes, alkynes and arene." This reads on the non-limiting example embodiment on p. 9, ln. 1-4, of the original specification.

Independent claim 1 also recites that "X' is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion." This reads on the non-limiting example embodiment on p. 9, ln. 5-9, of the original specification.

Independent claim 1 also recites that "m' is an integer from 1 to 10." This reads on the non-limiting example embodiment on p. 9, ln. 10, of the original specification.

Independent claim 1 also recites that "n' is an integer from 0 to 40, provided that each L' is the same or different in the case where n' is 2 or higher, and provided that L' functions as a ligand connecting metal atoms in the case where m' is 2 or higher." This reads on the non-limiting example embodiment on p. 9, ln. 11-13, of the original specification.

Independent claim 1 also recites that "p' is an integer from 0 to 40, provided that each X' is the same or different in the case where p' is 2 or higher." This reads on the non-limiting example embodiment on p. 9, ln. 14-15, of the original specification.

Independent claim 1 also recites that "both p' and n' are not zero at the same time." This reads on the non-limiting example embodiment on p. 9, ln. 16, of the original specification.

Independent claim 1 also recites that Formula 3 is " $M_m L_n X_p$." This reads on the non-limiting example embodiment on p. 10, ln. 1-2, of the original specification.

Independent claim 1 also recites that "M" is Ti, Ta, Cr, Mo, Ru (provided that M' in Formula 2 is not Ru), Ni, Pd (provided that M' in Formula 2 is not Pd), Cu, Au (provided that M' in Formula 2 is not Au) or Al." This reads on the non-limiting example embodiment on p. 10, ln. 4-6, of the original specification.

Independent claim 1 also recites that "L" is a neutral ligand comprising 1-20 carbon atoms, which is selected from the group consisting of amine compounds, phosphine compounds, phosphite compounds, phosphineoxide compounds, arsine compounds, thiol compounds, carbonyl compounds, alkenes, alkynes and arenes." This reads on the non-limiting example embodiment on p. 10, ln. 7-11, of the original specification.

Independent claim 1 also recites that "X" is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion." This reads on the non-limiting example embodiment on p. 10, ln. 12-16, of the original specification.

Independent claim 1 also recites that "m" is an integer from 1 to 10." This reads on the non-limiting example embodiment on p. 10, ln. 17, of the original specification.

Independent claim 1 also recites that “n” is an integer from 0 to 40, provided that each L” is the same or different in the case where n” is 2 or higher, and provided that L” functions as a ligand connecting metal atoms in the case where m” is 2 or higher.” This reads on the non-limiting example embodiment on p. 10, ln. 18 – p. 11, ln. 2, of the original specification.

Independent claim 1 also recites that “p” is an integer from 0 to 40, provided that each X” is the same or different in the case where p” is 2 or higher.” This reads on the non-limiting example embodiment on p. 11, ln. 3-4, of the original specification.

Independent claim 1 further recites that “both p” and n” are not zero at the same time.” This reads on the non-limiting example embodiment on p. 11, ln. 5, of the original specification.

Independent Claim 11

Independent claim 11 recites “[a] pattern of a metal alloy or oxide of an organometallic composition.” This reads on the non-limiting example embodiment on p. 14, par. [0022] – p. 18, par. [0031], of the original specification. The “organometallic composition” may be as discussed above with regard to independent claim 1 and as disclosed with regard to the non-limiting example embodiment on p. 7, par. [0014] – p. 11, ln. 5, of the original specification.

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

Appellants seek the Board's review of the rejection of claims 1-2 and 11 under 35 U.S.C. § 103(a) as being unpatentable over JP 2001-221908 (Furuya-JP)⁴ in view of US 6,184,403 (Welch).

⁴ The corresponding English disclosure of Furuya-JP may be found in US 6,514,628 (Furuya-US).

VII. ARGUMENT

Examiner Erred In Rejecting Claims Under 35 U.S.C. § 103(a)

The Examiner takes the position that claims 1-2 and 11 are unpatentable over JP 2001-221908 (Furuya-JP)⁵ in view of US 6,184,403 (Welch). Appellants respectfully disagree with the Examiner's position for the reasons expressed below.

Principles of Law

The Examiner bears the initial burden of presenting a *prima facie* case of obviousness when rejecting claims under 35 U.S.C. § 103.⁶ When presenting the *prima facie* case, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness.⁷ In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the art.⁸ Furthermore, "there must be *some articulated reasoning with some rational underpinning* to support the legal conclusion of obviousness' . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take

⁵ The corresponding English disclosure of Furuya-JP may be found in US 6,514,628 (Furuya-US).

⁶ *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993).

⁷ *In re Fine*, 837 F.2d 1071, 1073, 5 USPQ2d 1956, 1958 (Fed. Cir. 1988).

⁸ *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

account of the inferences and creative steps that a person of ordinary skill in the would employ.”⁹

Obviousness must be determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments.¹⁰ Thus, a claimed invention that otherwise might be viewed as an obvious modification of the prior art will not be deemed obvious when one or more prior art references “teach away” from the claimed invention.¹¹ “A reference may be said to teach away [from a suggested path] when a person of ordinary skill, upon reading the reference, would be discouraged from following the [suggested] path”.¹²

The proposed modification also *cannot* render the prior art unsatisfactory for its intended purpose.¹³ If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is *no* suggestion or motivation to make the proposed modification.¹⁴

Furthermore, the obviousness inquiry must be approached from the correct temporal and objective perspectives. “Determinations of obviousness *cannot* be based

⁹ *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006)).

¹⁰ *See In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

¹¹ *E.g.*, *Gillette Co. v. S.C. Johnson & Sons, Inc.*, 919 F.2d 720, 724, 16 USPQ2d 1923, 1927 (Fed. Cir. 1990); *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 83 USPQ2d 1169 (Fed. Cir. 2007).

¹² *In re ICON Health & Fitness*, 496 F.3d 1374, 2007 U.S. App. LEXIS 18244 (Fed. Cir. 2007) (quoting *In re Gurley*, 27 F.3d 551, 553, 31 USPQ2d 1130, 1131 (Fed. Cir. 1994) and referencing *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007) (explaining that when the prior art teaches away from a combination, that combination is more likely to be nonobvious)).

¹³ *MPEP* 2143.01.

¹⁴ *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

on the hindsight combination of components *selectively* culled from the prior art to fit the parameters of the patented invention.”¹⁵ The decision maker must step back in time to before the moment of actual invention, and out of the actual inventor's shoes into those of a hypothetical, ordinary skilled person who has *never* seen the invention.¹⁶ The legal question is whether, in light of the differences between the invention and the prior art, and all relevant facts, the invention would have been obvious at *that* time to *such* a person.¹⁷

Cited Art Fails to Disclose All Claimed Limitations

As a preliminary matter, the combination of Furuya-JP and Welch fails to disclose the “**organometallic compound**” of claims 1 and 11. Rather, Furuya-JP merely teaches that, in the vehicle-mounted lamp 4, the reflective film 3 (metal alloy layer) may be formed on the organic ground film 8, which is an adhesive layer, for improved *mechanical* adhesion to the substrate 2.¹⁸ Thus, the carbon atoms of the organic ground film 8 are not chemically bonded to the metal atoms of the reflective film 3 so as to result in an “organometallic compound.”

Although the Examiner can give the pending claims their broadest *reasonable* interpretation during examination¹⁹, it is important to note that the broadest

¹⁵ *Crown Operations Int'l, Ltd. v. Solutia, Inc.*, 289 F.3d 1367, 1376 (Fed. Cir. 2002).

¹⁶ *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983).

¹⁷ *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1566-1568 (Fed. Cir. 1987).

¹⁸ *Furuya-JP*. English Abstract, last sentence (“The *joining property* is effectively reinforced by forming an organic base film 8 on the substrate 2 as the pretreatment and then forming the reflection film 3 thereon.”)

¹⁹ *MPEP* 2111.

reasonable interpretation of the claims must still be *consistent* with the interpretation that those skilled in the art would reach.²⁰ One of ordinary skill in the art would not interpret the *composite* layer (reflective film 3 and organic ground film 8) of Furuya-JP as being an “organometallic compound,” as recited by claims 1 and 11.

No Motivation to Arrive at Examiner’s Asserted Combination

The Examiner asserts that it would be obvious to substitute the organic ground film 8 of Furuya with the organic ligands of Welch to achieve “*higher volatility* in the organometallic compound.”²¹ This assertion is erroneous.

The organic ground film 8 of Furuya is an adhesive that improves the adhesion between the reflective film 3 and the substrate 2.²² In contrast, the metal-ligand complexes of Welch are “*highly volatile*” and beneficial as *precursors* in chemical vapor deposition processes.²³ Thus, there is no basis for concluding that the compounds of Welch are even adhesives. And even if the compounds of Welch have adhesive properties, there is no basis for concluding that the compounds would even be suitable in the vehicle-mounted *lamp* 4 of Furuya given their “*high volatility*.”²⁴ As a

²⁰ *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999).

²¹ *Final Office Action* (10/29/2008): p. 3, ln. 6-10.

²² *Furuya-JP*: English Abstract, last sentence (“The *joining property* is effectively reinforced by forming an organic base film 8 on the substrate 2 as the pretreatment and then forming the reflection film 3 thereon.”); *Furuya-US*: col. 3, ln. 5-7 (“[A]n organic ground film [8] for improving a *connecting characteristic* with the reflector film [3] is applied onto the substrate [2].”).

²³ *Welch*: Abstract (“*volatile metal complexes*”); col. 2, ln. 1-2 (“*high volatility* in the metal complex”) and ln. 27-28 (“metal-ligand complexes that are *highly volatile*”); col. 3, ln. 17 (“organometalloid compounds that confer *volatility*”); col. 4, ln. 27 (“*volatile metal complexes*”).

²⁴ *Id.*

result, there is no reason why one of ordinary skill in the art (who has *never* seen the invention) would have been motivated to substitute the organic ground film 8 of Furuya with the organic compounds of Welch.

Furthermore, there is no reason why one of ordinary skill in the art would want the organic ground film 8 of Furuya to be formed of a “highly *volatile*” organic material. As noted above, the organic ground film 8 of Furuya is an adhesive that adheres the reflective film 3 to the substrate 2. Thus, there is no reason why one of ordinary skill in the art would want the organic ground film 8 (adhesive) of Furuya to be prone to *volatilization* during the operation of the vehicle-mounted lamp 4 of Furuya.²⁵ Volatilization of the organic ground film 8 would *undermine* the purpose of the adhesive layer and would render the vehicle-mounted lamp 4 of Furuya *unsatisfactory* for its intended purpose if the reflective film 3 was not properly secured to the substrate 2.

²⁵ *Furuya-US*: FIG. 1A; col. 3, ln. 47-50 (“vehicle-mounted lamp 4”).

VIII. CONCLUSION

For at least the reasons above, a *prima facie* case of obviousness cannot be established with regard to claims 1 and 11. Consequently, a *prima facie* case of obviousness cannot be established with regard to claim 2, at least by virtue of its dependency on claim 1. Accordingly, Appellants respectfully request the Board to reverse the Examiner's rejection.

If the USPTO believes that personal communication will further the prosecution of this application, the Office is invited to contact Alex Chang, Reg. No. 52,716, at the telephone number below.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKY, & PIERCE, P.L.C.

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IX. CLAIMS APPENDIX

1. (Previously Presented) An organometallic composition comprising organometallic compound (I) of Formula 1 containing Ag, organometallic compound (II) of Formula 2 containing at least one of Au, Pd and Ru, and organometallic compound (III) of Formula 3 containing at least one of Ti, Ta, Cr, Mo, Ru, Ni, Pd, Cu, Au and Al, wherein the metal components of organometallic compounds (II) and (III), respectively, are present in an amount of 0.01~10mol% based on the mole amount of Ag in the organometallic compound (I):

Formula 1



wherein,

L is a neutral metallic ligand having photosensitivity, which comprises 1~20 carbon atoms and a donor selected from the group consisting of N, P, O, S and As;

X is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion;

m is an integer from 1 to 10;

n is an integer from 0 to 40, provided that each L is the same or different in the case where n is 2 or higher, and provided that L functions as a ligand connecting Ag atoms in the case where m is 2 or higher; and

p is an integer from 0 to 40, provided that each X is the same or different in the case that p is 2 or higher; and

both n and p are not zero at the same time;

Formula 2



wherein,

M' is Au, Pd or Ru;

L' is a neutral ligand comprising 1~20 carbon atoms, which is selected from the group consisting of amine compounds, phosphine compounds, phosphite compounds, phosphineoxide compounds, arsine compounds, thiol compounds, carbonyl compounds, alkenes, alkynes and arene;

X' is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion;

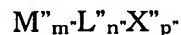
m' is an integer from 1 to 10;

n' is an integer from 0 to 40, provided that each L' is the same or different in the case where n' is 2 or higher, and provided that L' functions as a ligand connecting metal atoms in the case where m' is 2 or higher;

p' is an integer from 0 to 40, provided that each X' is the same or different in the case where p' is 2 or higher; and

both p' and n' are not zero at the same time; and

Formula 3



wherein,

M" is Ti, Ta, Cr, Mo, Ru (provided that M' in Formula 2 is not Ru), Ni, Pd (provided that M' in Formula 2 is not Pd), Cu, Au (provided that M' in Formula 2 is not Au) or Al;

L" is a neutral ligand comprising 1~20 carbon atoms, which is selected from the group consisting of amine compounds, phosphine compounds, phosphite compounds, phosphineoxide compounds, arsine compounds, thiol compounds, carbonyl compounds, alkenes, alkynes and arenes;

X" is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion;

m" is an integer from 1 to 10;

n" is an integer from 0 to 40, provided that each L" is the same or different in the case where n" is 2 or higher, and provided that L" functions as a ligand connecting metal atoms in the case where m" is 2 or higher; and

p" is an integer from 0 to 40, provided that each X" is the same or different in the case where p" is 2 or higher; and

both p" and n" are not zero at the same time.

2. (Original) The composition according to claim 1, wherein L represents a neutral ligand selected from the group consisting of amine compounds, phosphine compounds, phosphite compounds, phosphineoxide compounds, arsine compounds, thiol compounds, carbonyl compounds, alkenes, alkynes and arene.

3-10. (Cancelled).

11. (Previously Presented) A pattern of a metal alloy or oxide of an organometallic composition comprising organometallic compound (I) of Formula 1 containing Ag, organometallic compound (II) of Formula 2 containing at least one of Au, Pd and Ru, and organometallic compound (III) of Formula 3 containing at least one of Ti, Ta, Cr, Mo, Ru, Ni, Pd, Cu, Au and Al, wherein the metal components of organometallic compounds (II) and (III), respectively, are present in an amount of 0.01~10mol% based on the mole amount of Ag in the organometallic compound (I):

Formula 1



wherein,

L is a neutral metallic ligand having photosensitivity, which comprises 1~20 carbon atoms and a donor selected from the group consisting of N, P, O, S and As;

X is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion;

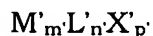
m is an integer from 1 to 10;

n is an integer from 0 to 40, provided that each L is the same or different in the case where n is 2 or higher, and provided that L functions as a ligand connecting Ag atoms in the case where m is 2 or higher; and

p is an integer from 0 to 40, provided that each X is the same or different in the case that p is 2 or higher; and

both n and p are not zero at the same time;

Formula 2



wherein,

M' is Au, Pd or Ru;

L' is a neutral ligand comprising 1~20 carbon atoms, which is selected from the group consisting of amine compounds, phosphine compounds, phosphite compounds, phosphineoxide compounds, arsine compounds, thiol compounds, carbonyl compounds, alkenes, alkynes and arene;

X' is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion;

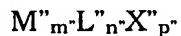
m' is an integer from 1 to 10;

n' is an integer from 0 to 40, provided that each L' is the same or different in the case where n' is 2 or higher, and provided that L' functions as a ligand connecting metal atoms in the case where m' is 2 or higher;

p' is an integer from 0 to 40, provided that each X' is the same or different in the case where p' is 2 or higher; and

both p' and n' are not zero at the same time; and

Formula 3



wherein,

M'' is Ti, Ta, Cr, Mo, Ru (provided that M' in Formula 2 is not Ru), Ni, Pd (provided that M' in Formula 2 is not Pd), Cu, Au (provided that M' in Formula 2 is not Au) or Al;

L'' is a neutral ligand comprising 1~20 carbon atoms, which is selected from the group consisting of amine compounds, phosphine compounds, phosphite compounds, phosphineoxide compounds, arsine compounds, thiol compounds, carbonyl compounds, alkenes, alkynes and arene;

X'' is an anion selected from the group consisting of F⁻, Cl⁻, Br⁻, I⁻, alkoxide, hydroxy, cyano(CN⁻), nitro(NO₂⁻), nitrate(NO₃⁻), nitroxyl, azide, thiocyanate, isothiocyanate, tetraalkylborate, tetrahaloborate, hexafluorophosphate(PF₆⁻), triflate(CF₃SO₃⁻), tosylate(Ts⁻), sulfate(SO₄²⁻), carbonate(CO₃²⁻), carboxylate, diketonate and alkyl anion;

m'' is an integer from 1 to 10;

n'' is an integer from 0 to 40, provided that each L'' is the same or different in the case where n'' is 2 or higher, and provided that L'' functions as a ligand connecting metal atoms in the case where m'' is 2 or higher; and

p'' is an integer from 0 to 40, provided that each X'' is the same or different in the case where p'' is 2 or higher; and

both p'' and n'' are not zero at the same time.

X. EVIDENCE APPENDIX

None.

APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 41.37
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XI. RELATED PROCEEDINGS APPENDIX

None.